

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~striketrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please AMEND claims 11, 12, 14-16, 18-20 and 22 and CANCEL claims 13, 17 and 21 in accordance with the following:

1-10. (Cancelled)

11. (Currently Amended) A method of backing up data stored in a first virtual storage associated with a source physical storage ~~via a first address correspondence table~~ into a target backup medium, comprising:

~~creating~~ providing a second virtual storage associated with ~~a backup~~ at least one physical storage ~~substantially equal to a size of actual data stored in the first virtual storage;~~

creating ~~a second~~ an address correspondence table between one or more block addresses of the actual data in the first virtual storage and sequential block addresses in the second virtual storage ~~based on the first address correspondence table and a third address correspondence table between the second virtual storage and the backup physical storage;~~

copying the actual data from the block addresses of the source physical storage to the sequential block addresses of the backup at least one physical storage ~~based on in accordance with the first, second and third~~ created address correspondence tables; and

backing up all the actual data from the ~~backup~~ at least one physical storage to the ~~target backup medium~~ without checking whether the block addresses of the at least one physical storage includes the actual data.

12. (Currently Amended) The method as claimed in claim 11, wherein the backing up all the actual data comprises recording the ~~first and second address correspondence tables and~~ an address correspondence table between block addresses of the source physical storage and block addresses of the first virtual storage in the ~~target backup~~ medium.

13. (Cancelled)

14. (Currently Amended) The method as claimed in claim 12, wherein the creating a second-an address correspondence table comprises removing ~~correspondence records~~ ~~corresponding to one or more~~ unused block addresses of the source physical storage ~~from the first address correspondence table.~~

15. (Currently Amended) A virtual storage system for backing up data in a target backup medium, comprising:

a first storage virtually storing data including actual data;

a source physical storage physically storing data including actual data, wherein said source physical storage associated with the first virtual storage ~~via a first address correspondence table;~~

a second virtual storage virtually storing actual data copied from the first virtual storage, wherein said second virtual storage is associated with the first virtual storage, ~~via a second address correspondence table~~ the second virtual storage equal to a size of actual data stored in the first virtual storage; and

~~a backup~~ at least one physical storage physically storing actual data copied from the source physical storage, wherein the ~~backup~~ physical storage is associated with the second virtual storage ~~via a third address correspondence table~~ and the actual data is copied in accordance with an address correspondence table between one or more block addresses of the actual data in the first virtual storage and sequential block addresses in the second virtual storage, wherein

all the actual data is backed up from the ~~backup~~ physical storage to the target backup medium without checking whether the block addresses of the at least one physical storage includes the actual data.

16. (Currently Amended) The virtual storage system as claimed in claim 15, wherein the ~~target backup~~ medium further physically stores the ~~first and second~~ address correspondence tables and an address correspondence table between block addresses of the source physical storage and block addresses of the first virtual storage.

17. (Cancelled)

18. (Currently Amended) The virtual storage system as claimed in claim 16, wherein the second address correspondence table is created by removing ~~correspondence records~~

~~corresponding to one or more unused block addresses of the source physical storage from the first address correspondence table.~~

19. (Currently Amended) A computer-readable medium storing instructions to back up data stored in a first virtual storage associated with a source physical storage ~~via a first address correspondence table~~ in a target backup medium, which when executed by one or more processors, cause the one or more processors to execute:

~~creating~~ providing a second virtual storage associated with a ~~backup~~ at least one physical storage ~~substantially equal to a size of actual data stored in the first virtual storage;~~

creating a ~~second~~ an address correspondence table between one or more block addresses of the actual data in the first virtual storage and sequential block addresses in the second virtual storage ~~based on the first address correspondence table and a third address correspondence table between the second virtual storage and the backup physical storage;~~

copying the actual data from the block addresses of the source physical storage to the sequential block addresses of the backup at least one physical storage based on in accordance with the first, second and third created address correspondence tables; and

backing up all the actual data from the ~~backup~~ at least one physical storage to the target backup medium without checking whether the block addresses of the at least one physical storage includes the actual data.

20. (Currently Amended) The computer-readable medium as claimed in claim 19, wherein the backing up all the actual data comprises recording the ~~first and second address correspondence tables~~ and an address correspondence table between block addresses of the source physical storage and block addresses of the first virtual storage in the target backup medium.

21. (Cancelled)

22. (Currently Amended) The computer-readable medium as claimed in claim 20, wherein the act of creating a ~~an second~~ address correspondence table comprises removing ~~correspondence records corresponding to one or more unused block addresses of the source physical storage from the first address correspondence table.~~